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AU 009217282 A US 4599829 A

(58) Field of search
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(54) Portable secure accommodation unit

(57) A portable accommodation unit, which is of particular value for a custody building within which prisoners or other persons may be confined, comprises a secure, generally box-shaped, load-bearing inner structure 11, an outer wall and a layer of heat-insulating material 12 disposed between said inner wall structure and said outer wall 13. Vertical and horizontal service ducts may be provided, and exterior frame members 22, 23 may permit multi-storey stacking. There may be insulation 16 inside the outer wall; auxiliary staircase, corridor, and like modules may be provided.

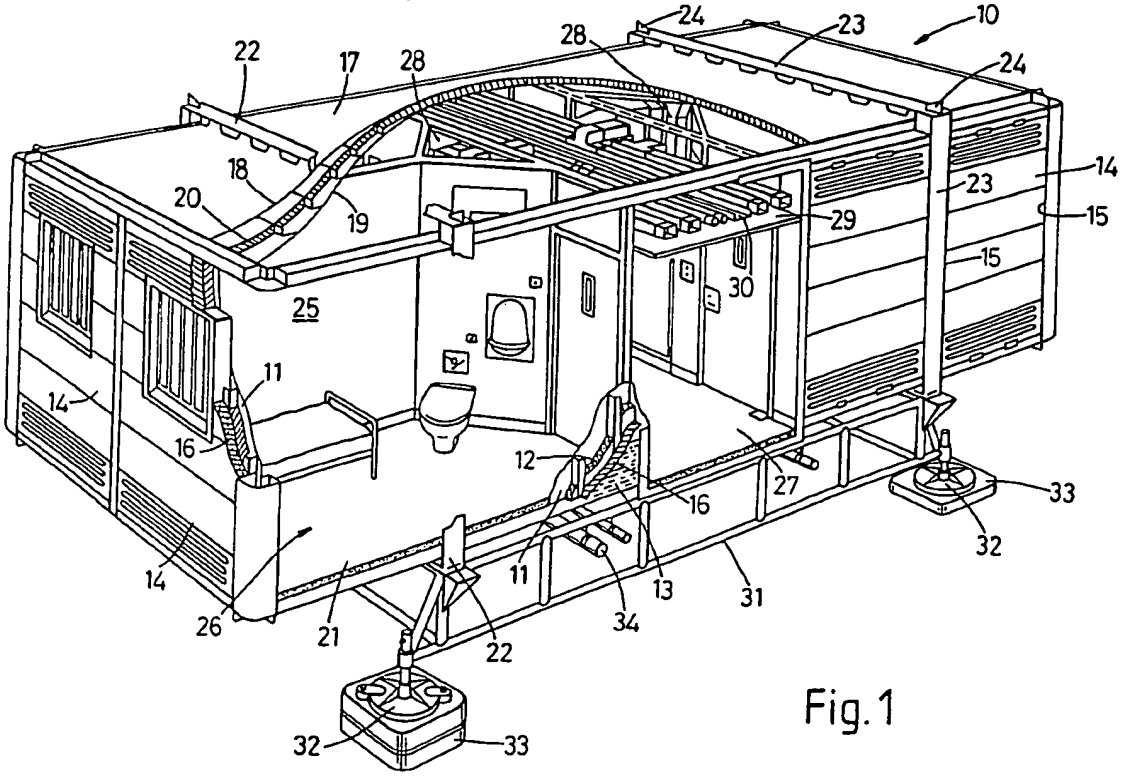

Fig.1

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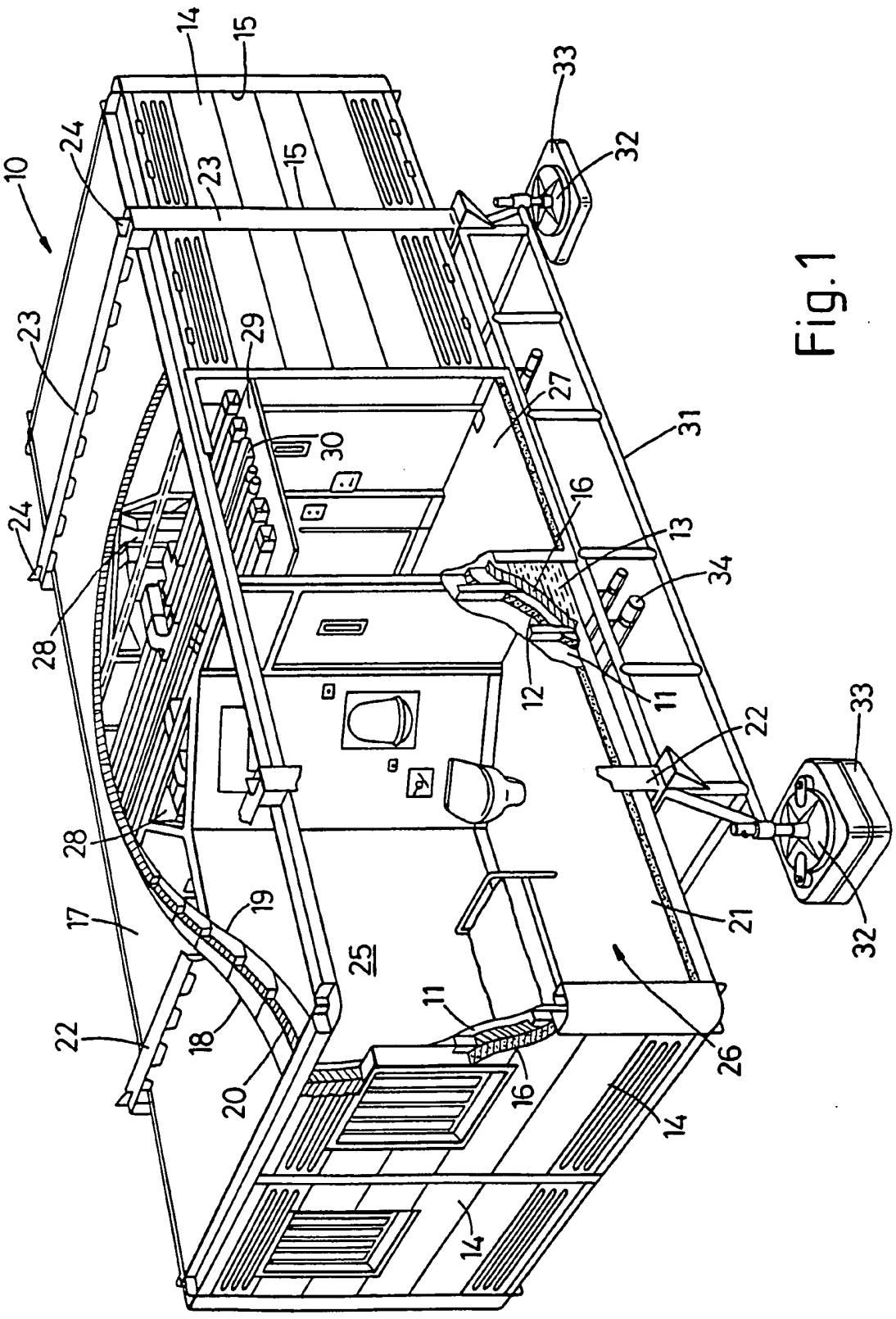
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Fig.1

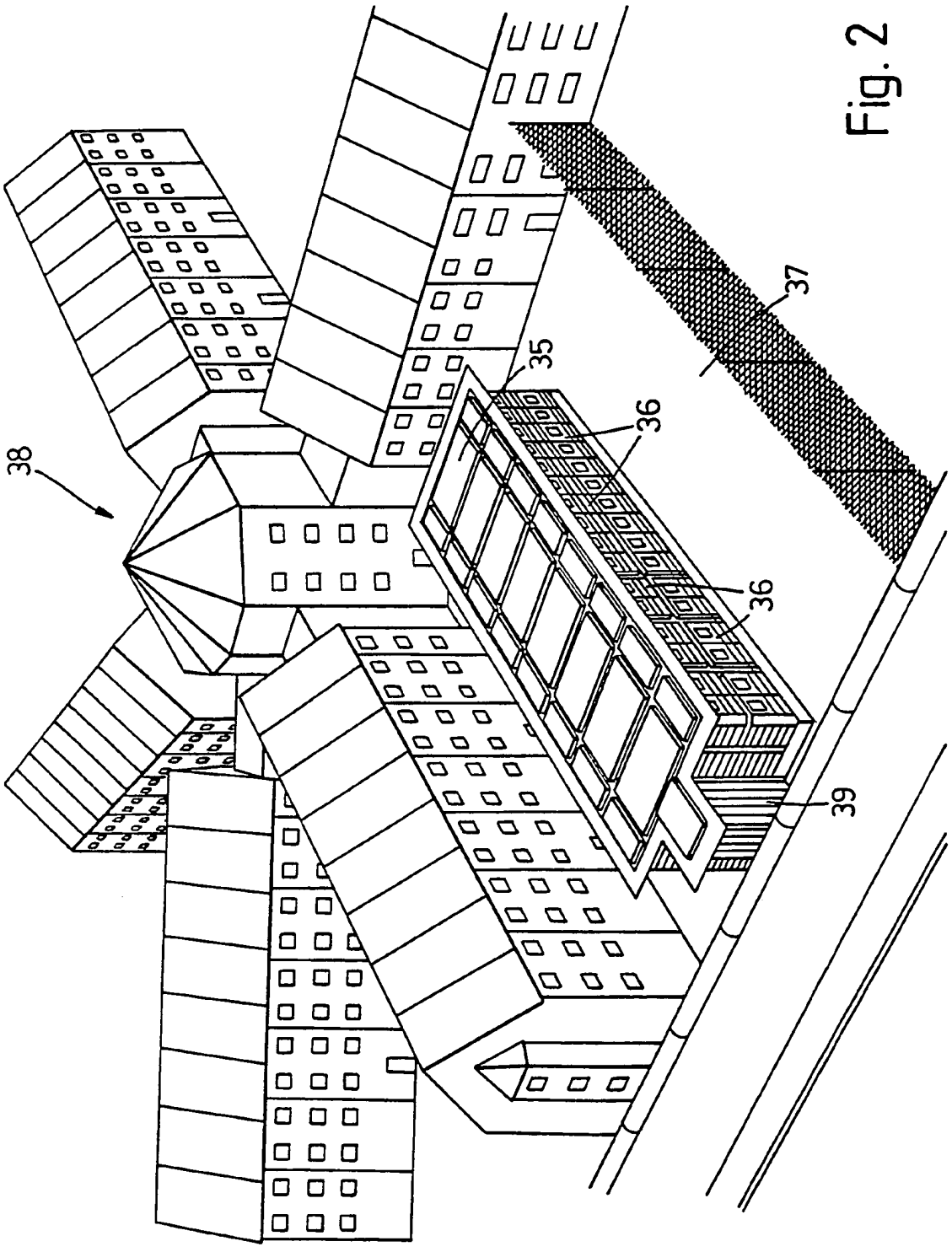

Fig. 2

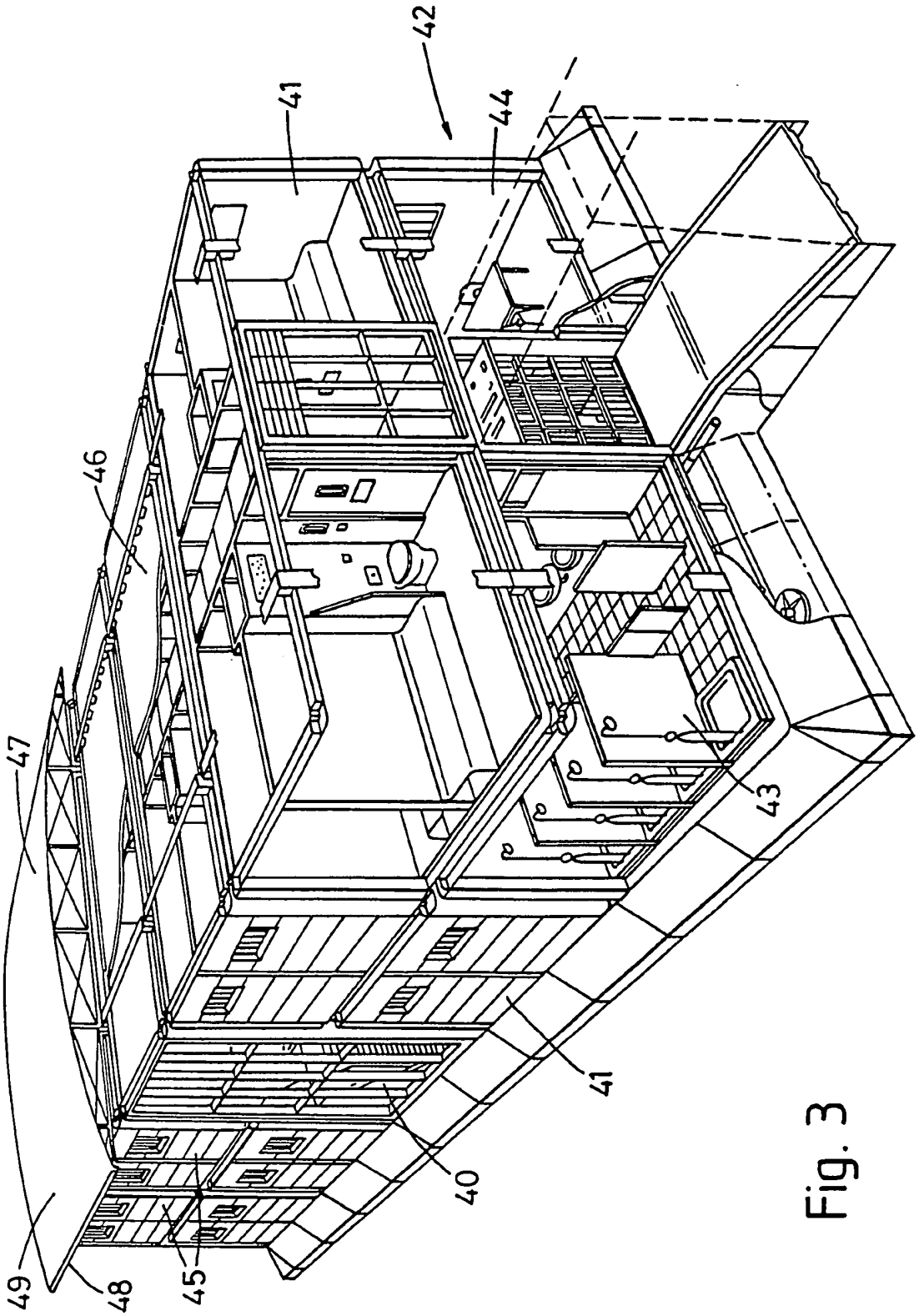

Fig. 3

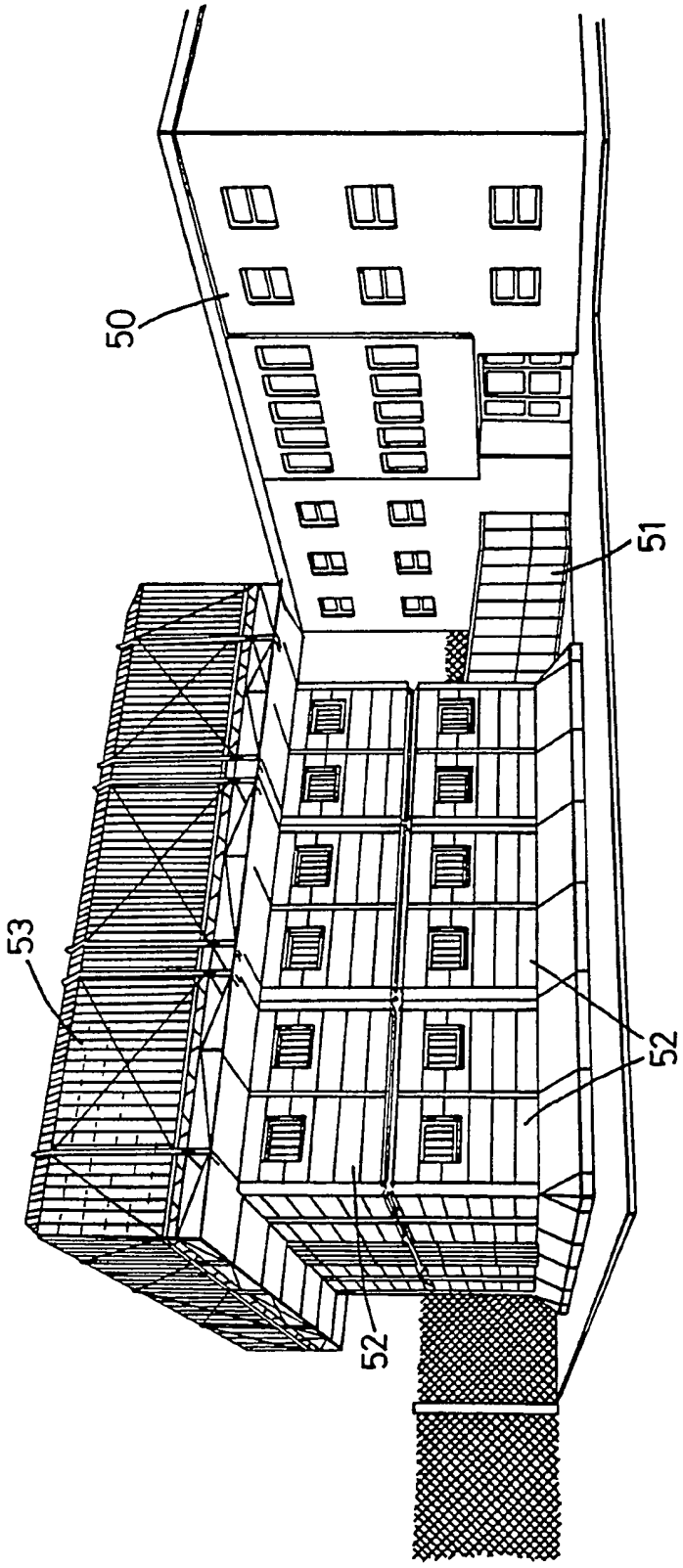

Fig. 4

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Portable accommodation unit

The present invention relates to a portable accommodation unit, which is of particular value for a custody building within which to confine prisoners or other persons but which may also be used for other accommodation purposes.

Custody buildings in the form of prisons or cell blocks almost invariably take the form of permanent structures built of conventional building materials on pre-designated sites and therefore afford very little or no flexibility in their use. This lack of flexibility in use is a serious limitation which leads to significant difficulties in practice, as will be explained.

The prison population in Western society tends to vary in cycles over the years and also to increase progressively, with the result that often the available prison capacity is insufficient, either for a short period or on a longer-term basis. On such occasions, any overcrowding in the available accommodation may readily give rise to a deterioration in living

standards therein. On other occasions, routine work carried out for maintenance, refurbishment or modernisation of existing accommodation reduces the amount of accommodation available and again can lead to local or regional overcrowding. Furthermore conventional prison accommodation is usually unable to cope with short-term, short-notice demands arising from national or international emergencies.

For the foregoing reasons, it would be desirable to provide temporary, for example portable, accommodation suitable for increasing the capacity of a prison or other such institution quickly for at least a limited period. Unfortunately, available temporary accommodation units, which may be suitable for housing members of the general population for a limited period in an emergency or for a longer period, are wholly unsuitable for confining prisoners in that they afford no security against escape, especially by a determined individual.

It is an object of the present invention to provide a portable accommodation unit by which some at least of these disadvantages of existing units are overcome and in particular which is suitable for use for confining prisoners.

The portable accommodation unit according to the present invention comprises a secure, generally

box-shaped, load-bearing inner structure, an outer wall and a layer of heat-insulating material disposed between said inner structure and said outer wall.

The unit of the present invention differs fundamentally from most prior portable buildings in that its main structural resistance to penetration, wilful damage and the like is provided by its inner wall structure, whereas such prior buildings usually rely on their external features for such purposes. In the present invention, the inner structure may be of metal, especially steel, of fibre-reinforced plastics material or of concrete or ferro-cement. The inner wall structure is preferably constructed by welding and/or fusing together metal sheets, so as to form a fully water-tight unit. In order to afford additional strength and stability to the inner wall structure, it is preferably provided with bracing and/or stiffening, most preferably on its outer face.

The portable accommodation unit also comprises an outer wall, for example assembled from panels, which may be removable. The panels may themselves be load-bearing but preferably are not but rather are supported and retained by a number of edge supports and/or other supporting

members. The outer wall is spaced from the inner structure and preferably does not depend upon the inner structure for support. For example, the inner structure may be embraced by one or more frames upon which the outer wall panels are mounted.

The outer wall will normally be both a functional and also a visible architectural feature. It preferably forms a weather-proof outer face to the unit, for example by means of panels interlocking at their edges. The outer wall may be formed of metal, for example steel, or of a ceramic material, wood, a fibre-reinforced plastic or a ferro-cement or similar product. The panels are preferably stiffened, either individually during their production or collectively during the assembling of the outer wall.

Both the inner face of the inner structure and the exposed outer face of the outer wall are preferably coated with a protective and/or decorative finish appropriate to the intended conditions of use. For example, the inner structure may be finished with a decorative polyester or similarly durable coating. The outer wall may be finished with an embossed or textured coating or a coating of aggregate, which may disguise and minimise the

effects of mechanical damage and vandalism.

Between the inner structure and the outer wall is at least one layer of heat-insulating material. Preferably the layer or layers are formed directly on the facing surfaces of the inner and/or outer walls. More preferably, an insulating layer is provided on the outer face of the inner structure and a further insulating layer is provided on the inner face of the outer wall panels. A range of suitable inorganic or organic materials may be used to form the insulating layer(s) and, by careful selection of the material used, other desirable or necessary properties, such as of fire-resistance, vapour-resistance, weather-resistance and sound insulation, may be imparted.

In one preferred form of the portable accommodation unit according to the present invention, the unit is enclosed within an open metal frame, or more preferably within a pair of continuous metal frames, whereby additional stability is imparted to the structure overall and in addition a base is formed upon which one or more additional units may be mounted above a first such unit. The inner structure and/or the outer wall, including the outer roof and wall sections, may be bolted or welded or otherwise

directly attached to the frame(s). Lifting connection points are preferably provided on the frame(s).

At least one service duct to enclose a range of possible services is preferably provided within the inner structure of the unit. Preferably each unit includes at least a horizontal service duct and preferably also a vertical service duct. Such services include electricity and water supply, rainwater and waste disposal, ventilation and any other services associated with accommodating one or more individuals for a period of time.

Within the inner structure, one or more vertical and optionally horizontal partitions may be provided as desired. In the context of the confining of prisoners in custody, such partitions are preferably of stiffened metal plate. By means of vertical partitions, the interior of the unit may be divided into separate cells and/or other rooms, including toilet, bath and shower cubicles, store-rooms and catering or recreational rooms and corridors. Vertical partitions may also define vertical service ducts. Horizontal partitions may be used to form ceilings and/or to define horizontal service ducts. Service ducts are preferably accessible only from corridors, access normally being via strong access doors.

The invention will now be further described and illustrated, by way of example only, with reference to the accompanying drawings, wherein:

Fig. 1 is a cut-away perspective view of one preferred form of portable accommodation unit according to the present invention; and

Figs. 2 to 4 illustrate, in various perspective views, three forms of accommodation complexes assembled from units according to the invention.

The portable accommodation unit illustrated in Fig. 1, designated generally by the numeral 10, comprises an inner wall structure 11 formed as a secure box-shaped structure by welding together steel panels to provide a fully water-tight unit. The structure 11 is braced and stiffened on its outer face (relative to the unit overall) to provide a structurally stable load-bearing diaphragm. The inner face of the structure is finished with a seamless decorative coating of polyester. Its outer face is coated with a layer 12 of heat-insulating material.

The unit 10 further comprises an outer wall 13 assembled from inter-locking weather-proof metal

panels 14, which are held in place by metal edge supports and heavy-duty metal retainers 15. The panels 14 and retainers 15 are removable with special key devices, so that damaged panels may be replaced and panels of different materials or surface characteristics interchanged.

Panels 14 are non-loadbearing and are provided with heat insulating coatings 16 on their inner surfaces. The outer face of the panels is finished with a textured surface.

The roof 17 of the illustrated accommodation unit is formed of two layers 18, 19 of durable metal plates, between which are sandwiched layers 20 of insulant. The floor 21 is formed of a single-skin deck of stiffened metal plate, coated on its lower face with a layer of insulant which in turn is overlain by panels of impact-resistant sheet of fibre-reinforced plastic to protect it from damage and from exposure to the weather.

The whole unit is embraced by two continuous metal frames 22, 23, which encircle the unit at a distance apart. The frames 22, 23 provide support and stability for the unit overall and a load-bearing base upon which additional similar units may be supported in one or more upper rows. Lifting and

positioning guides 24 are located on the upper corners of these frames.

Internal vertical partitions 25 divide the interior of the accommodation unit 10 into cells 26 and a corridor 27 and form vertical service ducts 28 to contain soil and waste pipes and other service conduits. A horizontal partition 29 above the corridor 27 defines a horizontal service duct 30.

The accommodation unit is supported upon a foundation frame 31 based upon adjustable levelling feet 32 founded on base pads 33. The frame 31 defines a further space for service conduits 34.

Fig. 2 illustrates one way in which a separate accommodation block 35 may be constructed from accommodation units 36 in an open yard area 37, for example a car park, of an established prison complex 38. The units 36 are assembled in two stories with a staircase 39 at one end as shown.

The accommodation block illustrated in Fig. 3 is constructed from accommodation units according to the invention of three types, together with an internal stair module 40. The units 41 are four-cell units and below one of these units is a unit 42 having an ablutions area 43 at one end and one or two interview rooms 44 at the other end. The units

45 are internally open-plan units which separately or in combination form spaces for association or recreation.

The roof 46 of the accommodation block of Fig. 3 may be flat for rainwater drainage or roof modules 47 may be mounted upon the roof 46 to provide overhanging eaves 48 and a sloping surface 49, both of which are deterrents to prisoners attempting to take up positions on the roof.

Figure 4 illustrates a further form of accommodation complex, situated adjacent to an existing custody building 50 to which direct access may be afforded by a covered ramp 51. The complex has been constructed from six units 52 according to the invention, in two storeys, and has an exercise deck 53 above the upper storey.

As will be apparent from the foregoing description and as illustrated in the accompanying drawings, the accommodation unit according to the present invention can be adapted to perform a wide variety of functions and in particular can provide secure temporary or longer-term accommodation for confining prisoners or other persons.

CLAIMS

1. A portable accommodation unit comprising a secure, generally box-shaped, load-bearing inner structure, an outer wall and a layer of heat-insulating material disposed between said inner structure and said outer wall.

2. A portable accommodation unit as claimed in claim 1, wherein said inner structure is of metal, fibre-reinforced plastics material, concrete or ferro-cement.

3. A portable accommodation unit as claimed in claim 1 or claim 2, wherein said inner structure is provided with bracing and/or stiffening.

4. A portable accommodation unit as claimed in any of claims 1 to 3, wherein said outer wall is assembled from panels.

5. A portable accommodation unit as claimed in claim 4, wherein said panels are retained by edge supports and/or other supporting members.

6. A portable accommodation unit as claimed in claim 4 or claim 5, wherein said panels interlock at their edges.

7. A portable accommodation unit as claimed in any of the preceding claims, wherein said outer wall is of metal, a ceramic material, a fibre-reinforced plastics material or a ferro-cement.

8. A portable accommodation unit as claimed in any of the preceding claims, wherein the inner face of the inner structure and the outer face of the outer wall are coated with a protective and/or decorative finish.

9. A portable accommodation unit as claimed in claim 8, wherein the inner face of the inner structure is finished with a polyester coating.

10. A portable accommodation unit as claimed in claim 8 or claim 9, wherein the outer face of the outer wall is finished with an embossed or textured coating or a coating of aggregate.

11. A portable accommodation unit as claimed in any of the preceding claims, having layers of insulating material on the outer face of the inner wall and the inner face of the outer wall.

12. A portable accommodation unit as claimed in any of the preceding claims, which is enclosed within an open metal frame or pair of such frames.

13. A portable accommodation unit as claimed in any of the preceding claims, having at least one service duct within the inner structure.

14. A portable accommodation unit as claimed in any of the preceding claims, having at least one vertical partition within the inner structure.

15. A portable accommodation unit as claimed in claim 14, wherein said partition(s) is/are of stiffened metal plate.

16. A portable accommodation unit, substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition L) E1D (DCJ, DGS, DF109, DF134)

(ii) Int Cl (Edition 5) E04B E04H

Search Examiner
J D CANTRELL

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Date of Search
28 July 1993

Documents considered relevant following a search in respect of claims

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	US 4599829 (DI MARTINO)	1-3, 6, 13, 14
X	AU-A-17282/92 (THIESS)	1-3, 14

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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P: Document published on or after the declared priority date but before the filing date of the present application.

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